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Distribution of the local magnetic field of the vortex lattice near the surface of an anisotropic superconductor in oblique external magnetic fields

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Abstract

The distribution of the magnetic field in the unit cell of the Abrikosov vortex lattice near the surface of a uniaxial, anisotropic, type-II superconductor in an oblique external magnetic field is determined on the basis of the London model for the cases in which the symmetry axis is perpendicular and parallel to the boundary of the superconductor. The distribution of the local magnetic field is obtained as a function of the distance from the surface of the superconductor and the inclination angle of the external field. It is shown for an YBaCuO high-Tc superconductor that the investigation of the distribution function of the local magnetic field as a function of the angle of the external magnetic field relative to the symmetry axis and to the surface of the superconductor can yield important information about the anisotropic properties of the superconductor.